Syn. allowed

NOSB NATIONAL LIST
FILE CHECKLIST

PROCESSING

MATERIAL NAME: Sulfur dioxide

CATEGORY: Non-agricultural **Complete?:** 3/17

✓ **NOSB Database Form**

✓ **References**

____ **MSDS (or equivalent)**

✓ **FASP (FDA)**

✓ **Date file mailed out:** 2/14/95

✓ **TAP Reviews from:** Bob Durst
Steve Taylor
Richard Theuer

____ **Supplemental Information:**

100 ppm total. 3S free.

MISSING INFORMATION: no MSDS available

NOSB/NATIONAL LIST COMMENT FORM/BALLOT

Use this page to write down comments and questions regarding the data presented in the file of this National List material. Also record your planned opinion/vote to save time at the meeting on the National List.

Name of Material Sulfur dioxide

Type of Use: ____ **Crops;** ____ **Livestock;** ✓ **Processing**

TAP Review by:

1. Richard Theuer
2. Steve Taylor
3. Bob Durst

Comments/Questions:

My Opinion/Vote is:

Signature _____ **Date** _____

USDA/TAP REVIEWER COMMENT FORM

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Attach additional sheets if you wish.

This file is due back to us within 30 days of: 14 Feb

Name of Material: Sulfur dioxide

Reviewer Name: Steve Taylor

Is this substance Natural or Synthetic? Explain (if appropriate)

Natural

Please comment on the accuracy of the information in the file:

This material should be added to the National List as:

____ **Synthetic Allowed** _X_ **Prohibited Natural**

or, ____ **This material does not belong on the National List because:**

Are there any restrictions or limitations that should be placed on this material by use or application on the National List?

Any additional comments or references?

Signature Steve Taylor **Date** 3-10-95

2.

USDA/TAP REVIEWER
COMMENT FORM

Original mailing date: 14 Feb 1995.

Name of Material: Sulfur dioxide 21CFR184.1634
Reviewer Name: Richard C. Theuer

NATURAL Sulfur dioxide is a natural material produced by burning elemental sulfur in air. Sulfur is mined with hot water (the Frasch process) from underground deposits.

COMMENTS RE SECTION 2119(m) CRITERIA:

1. Sulfur dioxide is a "sulfiting agent" and thus prohibited by statute in organic foods.
2. Sulfur dioxide is an essential preservative for preventing oxidation of wine. Previous NOSB consensus indicated that sulfur dioxide would be a permissible ingredient in "wine made from organic grapes."
3. Sulfur dioxide has been used for centuries to preserve wine. Originally, lighted sulfur candles were used to control the growth of undesirable microorganisms during fermentation and to prevent oxidation and loss of quality in the casks.
4. Natural sulfur dioxide from burning sulfur is available; thus, the synthetic substances sodium or potassium bisulfite need not be allowed in wine made from organic grapes.

The following natural substance should be allowed as an ingredient in wine made with or from organic grapes. No other uses should be permissible in foods "made with organic food".

sulfur dioxide (produced by burning elemental sulfur).

February 22, 1995

USDA/TAP Reviewer Comment Form

Material: Sulphur dioxide

Reviewer: Bob Durst

Is this substance Natural or Synthetic? Explain (if appropriate)

Synthetic.

Please comment on the accuracy of the information in the file:

The file is accurate.

The literature is incomplete in that it doesn't address recent literature on the allergic reactions people suffer from (unfortunately, I don't have a good list either).

This material should be added to the National List as:

__X__ Synthetic Allowed,

_____ Prohibited Natural, or

_____ This material does not belong on the National List because:

Are there any restriction or limitations that should be placed on this material by use or application on the National List?

Should only be used in the limited application as an anti–microbial agent in the processing of wines. Levels should be limited to the minimum that can be used (≈50 ppm).

Any additional comments or references?

There has been much literature about the allergic reactions caused by SO_2. It should be limited to only those applications in which it has been shown to be essential. Other processes in which it has been traditionally used (maraschino cherries, dried fruits, anti–browning of various products) should not be allowed. In general its use in these other applications is to mask other defects or compensate for improper handling.

Signature Robert W. Durst Date 3/11/95

NOSB Materials Database

Identification

Common Name **Sulfur dioxide** **Chemical Name**

Other Names

Code #: CAS **Code #: Other**

N. L. Category Non-agricultural **MSDS** ○ yes ○ no

Chemistry

Family

Composition SO_2

Properties A colorless, nonflammable gas, under normal conditions of temperature and pressure, having a sharp, pungent odor.

How Made Mined or by-product elemental sulfur is burned to form sulfur dioxide gas.

Processing

Use/Action

Type of Use

Specific Use(s) Bleaching agent; preservative.

Action

Combinations

Status

OFPA "sulfiting agents" are prohibited.

N. L. Restriction

EPA, FDA, etc FDA requires labelling

Directions

Safety Guidelines Intensely irritating to the eyes, throat, and upper respiratory system.

State Differences

Historical status

Internationl status

NOSB Materials Database

OFPA Criteria

2119(m)1: chemical interactions **Not Applicable**

2119(m)2: toxicity & persistence **Not Applicable**

2119(m)3: manufacture & disposal consequences

2119(m)4: effect on human health

Causes asthma in some sensitive individuals; unlabelled uses not allowed by FDA; labelled uses not restricted by FDA but still hazardous.

2119(m)5: agroecosystem biology **Not Applicable**

2119(m)6: alternatives to substance

None for preservation of dried fruit or wine-making.

2119(m)7: Is it compatible?

References

See attached.

SULFUR DIOXIDE REFERENCES

AU: King,-A.D.-Jr.; Michener,-H.D.; Ito,-K.A.
TI: Control of Byssochlamys and related heat-resistant fungi in grape products.
SO: Appl-Microbiol. Washington, D.C. : American Society for Microbiology. Aug 1969. v. 18 (2) p. 166-173.
CN: DNAL 448.3-AP5

AU: Ramaswamy,-H.S.; Ranganna,-S.
TI: Residual peroxidase activity as influenced by blanching, SO2 treatment and freezing of cauliflowers.
SO: J-Sci-Food-Agric. Essex : Elsevier Science Publishers. 1989. v. 47 (3) p. 376-381.
CN: DNAL 382-SO12
AB: The influence of blanching time and SO2 treatment on the residual peroxidase activity and its implication for the sensory quality of frozen cauliflowers were assessed after storage for up to one year at -18 degrees C. The treated cauliflowers, sealed in polythene bags, were placed in waxed paperboard cartons and frozen in a contact plate freezer at -35 degrees C. The sensory quality of frozen stored cauliflowers related well to their residual peroxidase activity, which was sensitive to the SO2 treatment. Blanched cauliflowers following a brief dip in a metabisulphite solution prior to freezing gave a significantly (P less than 0.05) superior product even when stored for one year.

AU: Wedzicha,-B.L.
TI: Review: chemistry of sulphur dioxide in vegetable dehydration.
SO: Int-J-Food-Sci-Technol. Oxford : Blackwell Scientific Publications. Oct 1987. v. 22 (5) p. 433-450.
CN: DNAL TP368.J6

AU: Birch,-Gordon-Gerard, 1934-; Lindley,-M.-G.
TI: Interactions of food components.
SO: London ; New York : Elsevier Applied Science Publishers ; New York, NY, USA : Sole distributor in the USA and Canada, Elsevier Science Pub. Co., c1986. xi, 343 p. : ill.
CN: DNAL TX531.I52
AB: Abstract: The proceedings of a 1985 industry-university symposium for food scientists and technologists, food manufacturers, nutritionists, and psychophysicists, covers various aspects of the chemical and physical interactions of food components that impact on the production, processing, and storage of food. The 15 expert reviews comprising the text address include: interactions of sensory and nutritional components of food that influence appetite; interactions of food components with water, sulfur dioxide, nitrites, and bacteria; ... the functional properties of pectins in different foods; .....

AU: Salunkhe,-D.K.; Sharma,-R.P.
TI: Food additives: a benefit risk dilemma.
SO: Modern toxicology / edited by P.K. Gupta and D.K. Salunkhe. New Delhi : Metropolitan Book Co., 1985. v. 2 p. 131-251.
CN: DNAL RA1198.M6-1985

AU: Scholey,-J; Rawlinson,-A-P
TI: The role of sulphur dioxide in food processing. Control of microbial spoilage in low pH [hydrogen-ion concentration] p roducts with SO2. [Sulfur dioxide]
SO: Chem-Ind-Lond, Sept 21, 1974, 18: 716-717. Ref.
CN: DNAL 382-M31C

CNUM=2824

U.S. FOOD AND DRUG ADMINISTRATION
FOOD ADDITIVE SAFETY PROFILE

SULFUR
~~SULFUR~~ DIOXIDE

S#:	007446095	HUMAN CONSUMPTION:	1.2711	MG/KG BW/DAY/PERSON
SP#:	2824	MARKET DISAPPEARANCE:	1500000.000	LBS/YR
PE:	ASP	MARKET SURVEY:	87	
S#:	3039	JECFA:	FU-C	
MA#:	3039	JECFA ADI:	0.7	MG/KG BW/DAY/PERSON
AS#:	3	JECFA ESTABLISHED:	1986	
TENTIAL BEVERAGE USE		LAST UPDATE:	931015	
:	64.06	DENSITY:	LOGP:	

RUCTURE CATEGORIES: C1

MPONENTS:

NONYMS: SULFUROUS ANHYDRIDE
SULFUROUS OXIDE
SULFUR SUPEROXIDE

EMICAL FUNCTION: F

CHNICAL EFFECT: COLOR OR COLORING ADJUNCT
ANTIOXIDANT
ANTIMICROBIAL AGENT
FLAVORING AGENT OR ADJUVANT
FLAVOR ENHANCER

R REG NUMBERS: 182.3862 172.892

NIMUM TESTING LEVEL: 3

MMENTS: STUDY 1 FROM SCOGS-15

X 7: ACUTE TOXICITY INFORMATION

JDY: 1 SOURCE: GRM 000126 17: 4284
ECIES: RAT YEAR: 1970
LD50: 1040 MG/KG BW

MMENTS: STUDY 1 LD50 = 1040 MG/KG - 6.5% AQUEOUS SOLUTION OF SULFUR DIOXIDE USED
STUDY 1 LD50 = 2000 MG/KG - 3.5% AQUEOUS SOLUTION OF SULFUR DIOXIDE USED

7.